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**MES Factory Software Implementation and KI factory explanation**

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**MES Factory Software Implementation and KI factory explanation**

Moritz Hoehnel

Mattis Ritter

A thesis submitted in partial

fulfillment of the requirement for the award of the

Bachelor’s Degree of Mechanical Engineering with Honours

Faculty of Mechanical and Manufacturing Engineering

Universiti Tun Hussein Onn Malaysia

August 2023

I hereby declare that the work in this project report is my own except for quotations and summaries which have been duly acknowledged

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Prof. Madya Ts. Dr. Zakiah Binti Kamdi

ACKNOWLEDGEMENT

We would like to use this space to give a special acknowledgment for Dr. Low Cheng Yee, who always supported us in every matter.

We would like to also thank all the persons working in the UTHM-Frauenhofer IEM Innovation Lab. It was great working together with very helping people. It was a great experience being part of the project learning factory.

ABSTRACT

This is where you should start your writing of your abstract. Don’t change any of the setting.

ABSTRAK

Di sini anda sepatutnya memulakan penulisan abstrak. Jangan ubah *setting* yang telah dibuat. Jika penulisan abstrak ada melibatkan penggunaan ayat bahasa Inggeris, ayat tersebut mesti di *Italic*. Rujuk format penulisan tesis.

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LIST OF SYMBOLS AND ABBREVIATIONS

|  |  |  |
| --- | --- | --- |
|  | - | Angle of attack |
|  | - | Thermal efficiency |
| DCAM | - | Department of Civil Aviation of Malaysia |

You should start with explanation of symbols before abbreviation

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# INTRODUCTION

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**NOTE**: The first page of **Chapter 1** is **unnumbered** but is considered as page ‘1’. The same **applies** to the **first page** of all the **following Chapters**, where the **first page is unnumbered** but taken into account for the purpose of numbering the subsequent pages

**‘Heading 1’** is used for the chapter such as INTRODUCTION, LITERATURE REVIEW etc.

## Background Study (use Heading 2 style)

This is where you start your background writing. Use **‘Normal’** style to write in this section.

## Problem Statement (use Heading 2 style)

This is where you start your problem statement writing. Use **‘Normal’** style to write in this section.

## Aim

This is where you start your problem statement writing. Use **‘Normal’** style to write in this section.

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## Objectives

This is where you start your problem statement writing. Use **‘Normal’** style to write in this section. You can use **‘Itemised a, b, c’** style if you want to make short listing.

## Scope of Study

This is where you start your scope of study writing. Use **‘Normal’** style to write in this section. You can use **‘Itemised a, b, c’** style if you want to make short listing.

## Significant of study

This is where you start your significant of study writing. Use **‘Normal’** style to write in this section. You can use **‘Itemised a, b, c’** style if you want to make short listing.

# LITERATURE REVIEW

**NOTE**: The first page of **Chapter 2** is **unnumbered** but is considered as page ‘3’.

Page 3 (to be hidden)

When writing you literature review section, you would have to cite information you obtain from open literature. You must use a Reference Management Software such as Mendeley, Zotero, End Note, Refwork etc. This will help you a lot.

## Using Captioning and Cross Referencing

Here we will discuss the systematic what to write, and make editing with the Figure, Table or Equation that you make reference to.

### Captioning

Captions should be used whenever you insert a graphic, table or equation. To add a caption choose Insert Caption from the References tab on the Ribbon. Specify whether the label should be Figure, Table or Equation. You can also click at the figure and use right click button and choose insert caption. Use **‘Caption’** style for the caption title. **Note: adjust the numbering style in the caption tab to include chapter.** If it is table, then choose Table when you do captioning. The other step is the same. You should follow the correct thesis format for creating the table.

When you make caption for a figure, the title should be at below. On the other hand, if you caption a table, the tittle should be on the top. The caption that you have assigned for Figure, Table or Equation will be useful when you are going to make reference of the Figure, Table or Equation in your writing. In order to do that you are need to use a cross reference.

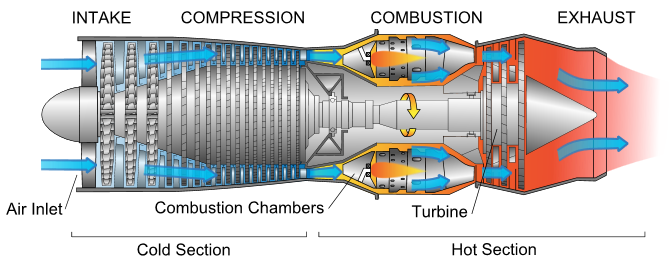


Figure 2‑1: Gas Turbine (use ‘Caption’ style)

Table 2‑1: Put a table title (use ‘Caption’ style)

|  |  |  |
| --- | --- | --- |
| Length Ratio | Lab Experiment in Average | Comparison Simulation in Average |
| 0.125 | 0.3 | 0.75 |
| 0.225 | 0.45 | 0.858 |
| 0.325 | 0.578 | 0.957 |
| 0.425 | 0.656 | 1.002 |

Equations and their captions can be placed ‘side-by-side’ by moving the equation and the caption into the cells of a borderless, 3 column x 1 row table as shown below. Simply copy and paste this table as many times as you need to for all subsequent equations, but remember to periodically highlight and update the equation captions by pressing the **F9** key (or right-click and select **Update Field** from the shortcut menu).

|  |  |  |
| --- | --- | --- |
|  |  | (2‑1) |
|  |  | (2‑2) |

### Cross Referencing

Use a cross-reference when you want to insert text similar to ‘… as shown in Figure 5.1, below’

1. Click on the **References tab** on the Ribbon
2. Select the **Cross-reference** command to open the Cross-reference window
3. In the Reference Type drop-down list choose the **appropriate label (heading, figure, table etc)**
4. Under For which heading choose **your figure**
5. Under Insert Reference To choose **Only label and number** and click **Insert**.
6. Click Close

### Updating Tables of Contents, Lists of Figures and Captions

Your table of contents, lists of figures and caption numbers will update automatically whenever you re-open the document, however you can ‘force’ an update at anytime by highlighting the table or text and pressing the **F9** key (or right-click and select Update Field from the shortcut menu). To update all fields in a document press **Ctrl+A** then **F9**

# METHODOLOGY

**NOTE**: The first page of **Chapter 3** is **unnumbered** but is considered as page ‘6’.

Page 6 (to be hidden)

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# RESULTS AND DISCUSSION

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# CONCUSSION AND RECOMMENDATIONS

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Page 8 (to be hidden)

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### Title (use Heading 3 style)

This is where you start your writing. Use ‘Normal’ style to write in this section.

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REFERENCES

This is where you start your reference writing

***ALWAYS/MUST Refer to “Thesis Writing Guide UTHM (BI)” or “Panduan Penulisan Tesis UTHM (BM)” when writing draft thesis PSM or Final Year Project Report.***